COMMERCIAL USER'S GUIDE TO THE

INTERNET NEWSLETTER

Volume 1, No. 3 January 1995

Emergence of the Mega-Provider: MCI, AOL, and Compuserve Expand Net Services

Three Internet access providers—MCI, America Online, and Compuserve—announced new or much-expanded Internet services in the last month, making each potentially bigger than all of the large established providers combined. The new providers are not only bigger, but are also positioned to offer a broader range of consumer and business services.

First, MCI announced November 21 that it will be providing an Internet service called internetMCI through its own high-speed network. The announcement makes MCI the last of the long-distance telephone companies (after AT&T and Sprint) to enter the Internet connectivity market, but the first of these companies to target business and consumer markets through pricing and services. MCI offers dedicated connections in some 400 U.S. locations and will be offering dial-up connections in about 25 large cities in early 1995.

America Online

A week after MCI made its announcement, America Online (AOL), the consumer online service with about 1.5 million subscribers, announced it had signed a definitive agreement to buy the assets of Advanced Networking and Services (ANS), the company that had managed the NSFNET backbone service since 1990. ANS lost both direction and revenue with the ending in 1994 of its role in maintaining the NSFNET, and was seeking to leverage its more than 12,000 miles of leased fiber-optic circuits. Analysts believe AOL will now be able to build local-access nodes to allow dial-up and dedicated access across the U.S.

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Sizzling Software, Services Shown at Conference

Internet World, first held in December 1993, has evolved into a full-fledged trade show. More than 11,000 people attended Fall 1994 Internet World, held Dec. 6-9 in Washington, D.C., and 115 vendors vied for attention on the exhibition floor. That's compared to 5,000 people at the Internet World show in December 1993 and 8,000 at last June's meeting in San Jose, according to Chris Fischer of MecklerMedia, the company that puts on the show. The following are some of the show's highlights.

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Spry Inc., flush from its strategic alliance with Compuserve (see p. 6) and selling about 50,000 units of its Internet in a Box a month (according to a Spry staffer on the show floor), announced a series of changes to its Mosaic browsers, which will ship in the first quarter of 1995. The browsers will offer newsgroup reading and posting from within Mosaic, and the Internet in a Box browser will support SLIP and compressed SLIP (CSLIP), in

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They're back: The Green Card lawyers strike again

Netcom goes public

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Publishers of information on business, communications and government

In Season...

Good marketing doesn't have to push products and services—especially at Christmas time. 1994 was the second year of the Cygnus Christmas tree, brought to you by Cygnus, the for-profit support arm of GNU, an organization that makes available, free, all the operating system and development software required to create a complete computing environment. Fingering **xmastree@cyngus.com** or going to the Web site, **http://www.cygnus.com/xmastree**, let you see various versions of the Cygnus Christmas tree, complete with blinking lights.

Tired of all those e-mail addresses for Santa Claus? Sun Microsystems pledged to give a dime to a food bank, Second Harvest, each time someone accessed **http://north.pole.org** (a site sponsored by the Internet Multicasting Service, the Net's version of public radio). Second Harvest serves the homeless, the needy, and AIDS patients in San Mateo and Santa Clara counties in the Bay area. By the way, Second Harvest is set up to accept direct contributions from individuals with a First Virtual account (see p. 4). Since this is the Net, someone spammed Santa, thinking they'd be saddling a big company with billions in charitable contributions. Sun, however, had set a maximum on the amount they'd give. ◆

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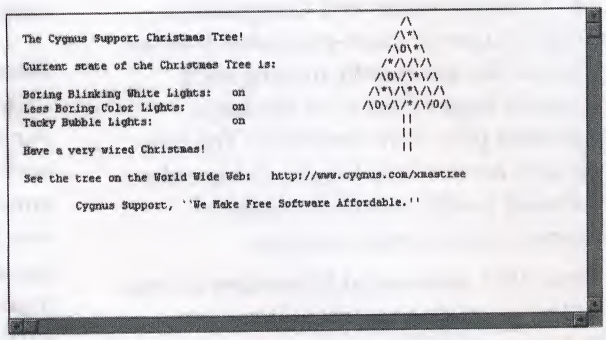

To "finger" a site means to send a user name and the address of a host computer—as when you send mail. What you get in response is text information kept in a file on the host computer. Fingering **xmastree@cygnus.com** returns what you see in this figure.

Don't spam Santa, unless you want to be on his "naughty" list. *Spam*, a term coined to honor the Arizona lawyers who have repeatedly sent unsolicited advertisements to thousands of newsgroups, comes from a Monty Python skit that involved throwing stuff at a wall. This graphic appears at **http://north.pole.org**.

Electronic Cash: A Buyer's Guide

*by Marianne Mueller**

What is cash? When I break a $20 bill to buy a book at a bookstore, the seller doesn't know or care who I am, and won't turn me down. As long as the $20 bill looks and feels like cash, the seller accepts it. Cash is thus *anonymous*, *nonrepudiable*, and *difficult to forge*. It also has a government and banking system behind it. At the end of day, the seller deposits the $20 bill in a bank account, and cash is merged into the global financial system backed not only by trust, but by guarantees from the government.

In the December 1994 issue of this newsletter, *Arnold Kling made the case for charging fractions of a cent for units of information on the Internet. In this article Marianne Mueller introduces several of the software technologies that will make "micropayments" possible over the next year or two.*

Cash on the Internet—whether based on a credit-card account or on a random string of numbers issued and redeemed by an online "bank"—has to incorporate many of the features of real-world cash if it's going to be widely accepted. Buyers must feel that anyone will accept their electronic cash and that no one will be keeping tabs on their buying habits; sellers must be able to trust the cash they receive, especially since it's easier to copy a series of 1's and 0's than it is to forge a penny.

	Digicash	NetCash	First Virtual
Anonymity	Y	Partial	Partial
Nonforgeable	Y	Partial	N/A
Nonrepudiability	Y	Partial	Y
Bank backing	N	N	Y
Peer to peer or Direct transaction	Peer to peer	Peer to Peer	Direct
Item sold	Anything	Anything <$100	Digital information
Encryption	Y	Optional	Optional
Software required	Special (freeware)	E-mail	E-mail

Let's look at some representative micropayment solutions in use or close to being released. We'll leave Web-based security schemes such as Secure HTTP and SSL out of the picture, since they are not deliberately designed to support micropayments.

DigiCash

After more than a decade of research, Dutch computer scientist and cryptologist David Chaum is now bringing fully encrypted digital cash to the Internet on a trial basis. His company, DigiCash, is not yet associated with an existing bank, and its "cyberbucks" don't yet represent any more convertible value than Monopoly dollars. But the Digicash model does represent an Internet-based monetary system that ensures anonymity, nonforgeability, and nonrepudiability.

DigiCash relies on encryption—scrambling a string of numbers so they are unreadable. Any buyer or seller who uses DigiCash's cyberbucks first needs to install a copy of the special but freely available DigiCash software (see the box at the end of this article for details). The DigiCash software uses *public-key encryption* to implement Chaum's concept of a *blind digital signature*. A digital signature unmistakably identifies the party who signs a document, while a *blind* digital signature hides the signatory from the receiver. Blind digital signatures guarantee the anonymity of buyer and seller, while at the same time guaranteeing that the cash is good and hasn't been used yet (nonrepudiability). (For more information about public key encryption, see Section 303 of your *Guide*.)

The only danger to such an encrypted system is that someone could steal your secret "keys"—analogous to someone stealing a safety deposit box key. Experts believe that attacks on DigiCash will be take the form of low-tech thefts, *not* sophisticated attacks on the virtually unbreakable encryption.

The DigiCash model calls for three players. The DigiCash "bank" exchanges legal tender for cyberbucks and redeems cyberbucks for legal tender. Individuals acquire and spend cyberbucks, while businesses accept and redeem cyberbucks.

(Continued on page 4)

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* *Marianne Mueller is a member of the technical staff at Sun Microsystems, and is active in the security and cypherpunk communities. She maintains a Security page on the World Wide Web* (**http://www.catalog.com/mrm/security.html**), *with links to the DigiCash, NetCash, and First Virtual sites mentioned in this article.*

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Electronic Cash. . .

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The DigiCash trial is now in full swing, with DigiCash making a million cyberbucks available to the world. Anyone who wants to take part can acquire $100 worth of cyberbucks and spend them at any of the two dozen businesses that are involved in the experiment. A list of participating businesses is available at **http://www.digicash.com**. The trial businesses include CyberMalls (selling software), MIT (selling technical reports), and a South African newspaper, the *Weekly Mail & Guardian* (selling subscriptions). In Washington, D.C., the Electronic Privacy Information Center, an advocacy group, accepts real donations in DigiCash.

NetCash

Software Agents Inc. (Germantown, Md.) offers a more practical, less complex solution to the micropayment problem by modeling how ordinary cash is used. The company wants to make it easy to pay someone 25 cents for an online newspaper, and have it *feel* as easy as giving someone a quarter for a newspaper. NetCash does not guarantee anonymity, nonrepudiability, or nonforgeability, but it does offer *practical* anonymity; buyers aren't protected by digital signatures, but it takes some doing to determine their identity. And NetCash is reasonably safe from fraud, the major concern for any new system of electronic commerce. To minimize risk further, the company only deals in small amounts of NetCash—under $100 per coupon. (*Note: Another project also called NetCash, still experimental, is underway at the Information Sciences Institute at the University of Southern California.*)

NetCash works entirely through e-mail. Like DigiCash, there are three players: the "bank" that exchanges real money for NetCash coupons, buyers, and sellers. But there the similarity ends. Consumers and merchants purchase and redeem NetCash coupons, in U.S. dollar denominations, at a 2 percent markup. A buyer sends an ordinary check or money order by postal mail to NetCash, which exchanges the dollars for NetCash coupons. The "bank" behind the NetCash system is the NetBank computer program, which has a secret—but not encryption-based—algorithm to generate NetCash coupons. When someone deposits a NetCash coupon, it is instantly invalidated, just as with DigiCash.

To buy a newspaper article you send a NetCash coupon to the seller in an e-mail message; to ensure security, messages can be encrypted using PGP (the Pretty Good Privacy encryption scheme), but both the sender and receiver need PGP software. A typical coupon is a string of letters and digits, such as `NetCash US$10.00 E123456H789012W`.

A merchant cashes a NetCash coupon by mailing it to the NetCash bank and asking for it to be deposited to an account. Until a coupon is cashed, the NetCash bank doesn't know that the coupon has been used. Cashing the coupon amounts to invalidating a particular set of digits and letters.

The advantage of NetCash is that it's simple, based on e-mail, working *now*, and available to anyone, not just people who have credit cards (a requirement of the First Virtual solution; see below). The drawback is that it is not completely secure against theft or forgery, and so should be used *only* for small-money transactions. The biggest customer of NetCash is *BoardWatch* magazine, which accepts subscriptions via NetCash.

First Virtual

First Virtual Holdings Inc. has devised an elegant model for transactions that doesn't require (or even benefit from) encryption, doesn't require any software other than an e-mail program (preferrably supporting MIME, so any kind of digital information can be

Who's on first? First Virtual was the first company to offer credit-card-based transactions on the Internet when it announced its mail-based electronic commerce service in October 1994. First Virtual was brilliantly successful in keeping its technology under wraps until it was operational, not wanting to disappoint the markets with promises and delays, an unusual show of restraint for the software business. However, the company is getting off the ground "more slowly than we might wish," said Einar Stefferud, one of the handful of distinguished Internet veterans—along with Marshall Rose and Nathaniel Borenstein—who conceived First Virtual and now run this office-less company from different parts of the U.S.

The problem is, with companies such as DigiCash and newer players such as CyberWorks and Microsoft making noises about their solutions *before* they are on the market, potential information sellers may be reluctant to choose a solution. Stefferud expects First Virtual to "ramp up" in February 1995, he told the *Guide*, when a "major" information seller, whose identity he wouldn't disclose, will start using the service. ◆

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transported as a mail attachment), and supports the Internet culture of a free flow of information. Its developers include several of the leading architects of the Internet (see the box on p. 4). In fact, First Virtual was designed to support the buying and selling of *information*. By not supporting the online sale of liquid goods (things that can be converted into hard cash), First Virtual lowers risks by making it less tempting for crackers to tamper with mail travelling between buyers and sellers, and between both and First Virtual. By keeping transactions small, it also lowers the sellers' liability.

Instead of creating an electronic version of cash, First Virtual has adapted the mechanism of the credit-card transaction to the Internet; First Virtual is a Master Merchant with FirstUSA, a bank that offers credit-card services.

Here's how the system works. Buyers and sellers each establish accounts with First Virtual. The buyer establishes an account by supplying First Virtual with a valid credit-card number over the phone—the credit-card number is never transmitted over the Internet—and choosing a First Virtual account ID consisting of any phrase that appeals to the buyer; First Virtual makes the phrase useless to anyone other than the account owner.

An information seller—a poet, a writer, or a software developer, for example—establishes a First Virtual account by sending in a check for $10 drawn on an ordinary bank and by agreeing to First Virtual's terms and conditions for the credit-card brokering, which include a 2 percent fee on completed transactions.

Buying something takes three steps. The buyer first asks the seller for a product, typically some sort of information product, such as a piece of software or a magazine article. (To see what First Virtual merchants are currently selling with this system, visit **http://www.fv.com**.)

The seller then sends an e-mail message to First Virtual to find out if the buyer has a valid First Virtual account. If the buyer has a valid account, the seller follows up by sending the requested information product to First Virtual, which takes over from this point. First Virtual forwards the requested "product" to the buyer. The buyer then has a chance to examine the product—like browsing in a book store before buying.

After a reasonable period of time First Virtual asks the buyer to confirm the transaction by responding "yea," "nay," or "fraud." If the buyer replies "yea," First Virtual charges the buyer's credit card, credits the seller's account, and the transaction is finished. If the buyer responds "nay," then First Virtual sends a message to the seller—"sorry, the buyer didn't like the product, and isn't buying." If the buyer responds "fraud," then both First Virtual and the seller are alerted to the presence of someone who is trying to defraud a valid account.

Using information about "fraud," First Virtual plans to compile a blacklist to make available to merchants, for their protection.To protect against fraudulent sellers First Virtual places a 90-day hold on money owed a seller (unless the merchant has a solid credit history).

Despite reliance on credit cards, First Virtual does support micropayments, since every download doesn't generate a credit-card charge; the overhead per transaction would be too high. Instead, information can be priced at fractions of a penny and charges can accumulate against an account until they reach at least 30 cents, the cost of a transaction for First Virtual.

First Virtual reserves the right to close the accounts of people who only browse—who abuse the system by continually requesting information products but refusing to pay for them. The idea is that since the marginal cost in reproducing and distributing information is very low, it is to everyone's advantage to make it as easy as possible to disseminate information, and only purchase information that is found to be of value.

The benefits of First Virtual are that it is operational *now* and is based on e-mail. With a bank behind it, this system is arguably the most credible current solution, if not the simplest to use. A drawback of First Virtual is that buyer and seller have to exchange e-mail messages, then exchange more messages with First Virtual. Having to verify each potential purchase of an information product with yet another e-mail message may not appeal to people who already can't keep up with overstuffed e-mail boxes. DigiCash and NetCash are more direct—but less secure, in the eyes of banks. ◆

For More Information

DigiCash	**http://www.digicash.com/**, or e-mail to **info@digicash.com**
NetCash	e-mail to **netbank-info@agents.com**
First Virtual	**http://www.fv.com/**, or e-mail to **info@card.com**
General	**http://www.research.att.com/www-buyinfo/** (links to electronic cash experiments being conducted around the world)

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Mega-Providers. . .

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With the $35 million purchase price AOL is also getting ANS's networking staff and 150 or so business clients who had become the company's mainstay with the phasing out of the NSFNET contract. ANS networking staff will remain within the new organization to provide service to existing and new business clients.

"It's a good match," said Dave Norton, chief technical manager at the Trane company, an air conditioning manufacturer that was one of ANS's key corporate clients. The management of the two companies have "common roots" going back to shared experience at IBM's Watson Research Labs. ANS's "technical expertise will be complemented by AOL's expertise in dealing with the public."

With the purchase, AOL acquires a superior network backbone, and in the long term may be able to bring down the cost of network access. It now has the capability of offering higher-speed access and a broader range of Internet tools for subscribers to its online service.

AOL's network expansion is significant in the context of its recent purchase of two small software vendors, BookLink and Navisoft. AOL now owns Booklink's Internetwork product, an integrated browser (see p. 9) that AOL would likely use as the interface to a full-fledged Internet service. Navisoft makes back-end server software of interest to electronic publishers.

Compuserve Weighs In

Finally, in the least conspicuous but perhaps most important announcement, AOL's biggest competitor, Compuserve, with some 2.4 million subscribers, said December 1 that it has entered a strategic alliance with software vendor Spry Inc., by which Compuserve's Network Services Division will resell Spry's Internet in a Box product, which includes a full range of Internet tools. Users of the software choosing Compuserve as their provider will be able to configure their connection and access the Internet with a few clicks. (See the box below.)

The Spry-Compuserve arrangement is significant in the context of Compuserve's August 1994 announcement of expanded Internet services for subscribers to the online service and its acquisition in September of Network Publishing Inc., a small company that provides Web services for business.

Compuserve won't just be reselling software. It will be offering Spry's customers Internet connectivity via Compuserve's global network, which currently sup-

Compuserve: Positioned to Lead the Pack?

Each of the new players has one or another overriding strength and corresponding liability. MCI brings engineering prowess and a world-class backbone, but little reputation as a marketer—it never ran "a well-merchandised store in a highly trafficked, attractive location," says a competitor. AOL is popular with the home market, but will corporations and technical users take it seriously, even with the acquisition of ANS? Are AOL's acquisitions strategic or just a desperate attempt to cobble together a big Internet access and service machine?

For commercial users Compuserve has the widest range of complementary strengths. Its network has 400 points of presence worldwide, including Australia, New Zealand, and Japan. Compuserve also has breadth and depth of experience serving business.

The company currently has 700 corporate customers, served by a 150-person "solutions-oriented" sales staff working out of 28 offices around the world. Compuserve's strength in serving the Fortune 1000s is now complemented by Spry's system-integration services to smaller companies.

Through Spry, Compuserve has an attractive and full-featured interface to its new Internet services. Spry's browser may not be the sexiest on the market, but the company does offer a complete suite of Internet tools for both the stand-alone and networked site. "Spry working together with Compuserve's Network Services Division will be able to put the whole solution together," says Bob Massey, executive vice president in that division. For Massey, Compuserve's experience working closely with companies to build networks sets the company apart from both carriers such as MCI and Sprint and online services with thinner corporate experience such as AOL.

Compuserve also has the resources to grow and innovate. Massey projects Compuserve's revenue this year will grow about 40 percent to around $500-600 million. Roughly a quarter of that is corporate business—ten times ANS's corporate business. For now, Compuserve has the most complete Internet access and service solution, especially for larger companies. ◆

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ports 14.4 kbps access in more than100 cities in the U.S. and has 400 points of presence worldwide. In other words, Compuserve will become an Internet service provider as well as an online service, and is currently testing 28.8 kbps as well as ISDN access. Giving a taste of the expanded Internet services to come, Compuserve announced in December the availability of Internet file transfer (FTP) via its online service.

For David Pool, CEO of Spry, the agreement with Compuserve opens up national and international markets and "signifies a change in the marketing of software and intellectual property." The alliance lets Spry practically give away its secure Air Mosaic Express software, making up the difference through line charges, Pool says.

Soup-to-Nuts Providers

MCI, AOL, and Compuserve are each assembling services designed to simplify Internet access for consumers and businesses, and they are creating the content that will draw connectivity customers.

MCI is developing partnerships with Netscape Communications Corp. (NCC), makers of World Wide Web software, and FTP Software, creators of easy-to-use TCP/IP communications software. In December NCC released commercial versions of both its browser and its secure server. MCI will resell the Netscape Web browser, which allows for the secure transmission of encrypted credit-card data, to internetMCI subscribers, and it will make the server software available to internetMCI merchants.

With Netscape, customers will be able to browse, shop, and buy things at marketplaceMCI, the supermall MCI simultaneously announced in November. MCI, through outside companies, will help merchants design and implement storefronts on marketplaceMCI. The mall is expected to go live in mid-January with about a dozen clients, says John Houser, a manager in MCI's Business Markets division.

Compuserve, too, plans to offer business customers everything: connectivity; client software; and the capability of designing, implementing, and managing Web sites, drawing on the expertise of both Spry and Network Publishing (see the box on p. 6 for more information).

Finally, AOL is putting its resources into expanding the content that will aggressively grow its subscriber base. Separately in November, AOL announced its AOL Greenhouse program to encourage online entrepreneurship. AOL will be offering entrepreneurs the opportunity to publish through AOL's planned World Wide Web site, while providing access to AOL's market and technologies and making available seed capital for selected projects.

Pricing

MCI will be charging customers $19.95 a month for seven hours online (after a $49.95 connection fee), after which it will charge $3 an hour; users of the 800 service will pay somewhat more.

AOL and Compuserve have recently lowered the prices for their online service, but the structure of their Internet pricing is not clear. Internet connectivity made available through Spry will cost $19 for five hours a month, and $3.95 thereafter, according to Pool, who cautioned that the numbers are subject to change. Compuserve itself has lowered its online service charges 40 percent over the last two years, and communications director Pierce Reid says the reductions will continue as Compuserve, whose roots have long been in the community of technical professionals, begins to target the home market.

The question remains, whether the online services will retain usage-based pricing as they move into the Internet. The high connect charges for Compuserve, for example, if translated into high Internet charges, might discourage browsing, which would in turn put a damper on Internet marketing.

Microsoft Forces the Pace

With access to the Internet becoming a commodity, access providers are working to provide more "value added" service. In focus groups representing Fortune 500 clients, Compuserve has found that businesses want to deal with a single networking vendor providing comprehensive solutions, says Bob Massey, executive vice president of Compuserve's Network Services Division. Providers have to sell more than connectivity to succeed. Connectivity options must be broad and service reliable.

It's widely recognized in the industry that Microsoft is forcing the pace of expansion in the access market. The world's dominant software vendor will be building communications protocols into its Windows 95 operating system, currently planned for release in the summer. Microsoft is also building an HTML editor into Word, forging alliances with phone and cable companies, and creating its own online service. 1995 will see large players rushing to offer expanded services in anticipation of Microsoft's likely bid for ownership of the desktop connectivity and services market. If you're shopping for a connection, it's still a buyer's market. ◆

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Internet World. . .

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addition to PPP. The original package was tailored to work best with pricy SprintLink, which offered only 1-800 service; now Spry is offering more features and automatic setup through other, more reasonably priced providers, including Compuserve.

Most important, Spry's browsers will support secure credit-card transactions. Both browsers will include an implementation of Secure HTTP, based on an industry-standard encryption technique developed by RSA Inc. Secure HTTP actually supports several encryption schemes, so the Spry browser will be able to work with many types of servers. Also building Secure HTTP into their products will be CyberCash, OpenMarket Inc., and Spyglass Inc.

Spry also announced a partnership with CheckFree, a leading provider of electronic payment services, so users of Spry's Mosaic products will be able to do secure online credit-card transactions.

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The big announcement from Spry's main competitor, **Netscape Communications Corp.**, is that **Bank of America** will be providing credit-card services to businesses conducting commerce with Netscape's Commerce Server and selling goods and services to people using the Netscape Navigator™ browser. (The server and browser were released December 15.) The Netscape browser is available free, but a commercial version is available for businesses that want support and documentation. The announcement comes after MCI selected Netscape as the interface to its new internetMCI service (p. 1). It follows the announcement earlier in November that First Data Services Group, which processes credit-card payments for 700 financial institutions serving 1.3 million merchants, would support credit-card transactions originating in Netscape software.

For now, businesses that want to use the bank's services must use the Netsite server and sell exclusively to customers with the Netscape browser. As security standards emerge over the next year, the Netsite server will be able to securely communicate with browsers from different vendors, says Rosanne Siino, communications director at NCC.

NCC will be making its Netscape browser available to merchants and access providers to customize and redistribute. MCI, for example, will be reselling Netscape, bundling the FTP Software communications stack. A merchant with an Internet presence might want to customize Netscape to point at its home page, says Siino.

NCC and Spry, by the way, are now members of both CommerceNet and the World Wide Web Consortium, the major consortia seeking to define standards for secure transactions on the World Wide Web. In the next year you'll probably see products that support multiple security schemes.

Bank of America, the country's largest merchant bank, will be rolling out the credit-card service in mid-to-late January to "under a dozen" long-time merchants, says Jim Aviles, a vice president in the bank's Merchant Services unit. Aviles expects the costs of Internet transactions to be "very much in line" with the costs of credit-card services currently offered.

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Mere connectivity doesn't cut it any more. As providers such as Compuserve and MCI burst on the scene with new services (see p. 1), the old guard of commercial access providers is offering an ever-broader range of value-added services. Internet access provider **UUnet** (Falls Church, Va.), formed in 1987, now makes navigational software, security mechanisms, and Web services available to its business clients. Of approximately 5,000 customers, 90 percent are organizations and companies, such as publisher John Wiley, *The New York Times*, Goldman Sachs, the IRS, the Social Security Administrations, and the FBI.

An alliance UUnet concluded at the end of November with Intersé (Hamilton, Va.) now allows UUnet to offer clients "a complete spectrum of Web services," says marketing vice president, Alan Taffel. Intersé will design and create Web pages, which UUnet will manage on its secure servers. The cost to companies consists of Intersé's bill for design services ($5,000-10,000 and up) and about $300 a month to UUnet for managing the server and providing a T1 link. That $300 a month—which includes facilities management and maintenance—compares to a cost of more than $1,000 a month if a company wants its own T1 link.

What is UUnet trying to do? The company "absolutely wants to be more visible as a provider of turnkey Internet services," says Taffel. A company can now outsource its server and T1 line to UUnet, while those individuals at the company who need access can get

Special thanks to everyone who stopped by the Thompson Publishing Group booth. It was a rare chance to get to know subscribers and to introduce the *Commercial User's Guide to the Internet* to a new audience.

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dialup connections, thus offloading to UUnet the high expense and hard work of maintaining a T1 line.

Intersé, with eight employees, a year's experience, and a hip image, will offer UUnet customers marketing and technical services in creating Web pages. A sample of its work can be seen in the Windham Hills Record site, shown below, the first product of the UUnet-Intersé alliance.

Windham Hill records now has a home page. It plays sample cuts for people with fast connections and sound cards.

UUnet is also talking to Spry about offering Internet in a Box and other Spry products as part of Spry's new reseller program, Internet Connect.

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The News from Clarinet. One of the first businesses to profit from the Internet, Clarinet takes news feeds from Associated Press, Reuters, NewsBytes, and other wire services, edits them, groups them, and sells them to companies and Internet access providers such as Netcom. Clarinet provides about 1,000 edited stories a day, organized in 300 newsgroups, to a readership of about 80,000 people, with revenues and readers doubling each year. Publisher Brad Templeton showed off Clarinet's new Web page (**http://www.clarinet.com** or **http://www.clari.net**) on the show floor. This Web page is designed to attract surfers (and new subscribers) by providing sample Clarinet News stories on business, politics, and sports. Templeton insists the Web itself is no threat to News, even with the sort of interactive features that HotWired and Time Inc. are using at their sites (see the December newsletter). In fact Templeton says his current model is working just fine: flat-rate subscriptions (amounting to about a $1 per reader per month) are a reliable source of income because readers are loyal and their number is growing; advertisers are "difficult to get" and hard to keep, says Templeton. The Web site is just a new method for Clarinet to publicize a successful service.

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Conspicuously absent from the show floor were two major access providers, **Netcom** and **MCI**. Online services with Internet pretensions, GEnie and Delphi, were also missing.

Netcom was present just *outside* the show floor, where sales vice president Allan Stiavetti and several Netcom staffers handed out copies of NetCruiser, the company's easy-to-install, easy-to-use integrated Internet software. The rest of the Netcom staff was scrambling to keep up with its national Net service, which has grown from about 10,000 to more than 50,000 subscribers in the past year, while senior management was on a road show to build support for Netcom's initial public offering, which took place December 15. Netcom was the first "pure" Internet access provider to go public. Unlike other older providers, such as UUnet, Netcom has clearly targeted the consumer market with its aggressive pricing ($19.95 a month for 40 free prime-time hours) and friendly interface. Stiavetti indicated that Netcom will soon be offering its business customers Web services as well.

MCI was also present outside the exhibition hall, through prominent infomercials pitching the new service.

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Cool! Microsoft created a stir at Comdex by announcing it would license Internet software from tiny BookLink, based in Needham, Mass. AOL recently bought BookLink for about $30 million—a lot of money for a company with until recently no shipping product. At AOL's booth people got to see why Bill Gates was excited and why AOL paid so much money. BookLink's InterNetwork product, now shipping, comes with complete communications software (Winsock, SLIP, and TCP/IP) and a Web browser that allows multiple downloading from the same site. It supports all the major protocols (mail, News, FTP, and Gopher), making it a fully integrated tool. Internetwork was clearly written for Windows, not ported from Unix. You can drag a Web page to an open document in Word (or other Windows application supporting Object Linking and Exchange). This means you can link your spreadsheet to an Internet stock feed and have the spreadsheet update itself using data from the Internet. ◆

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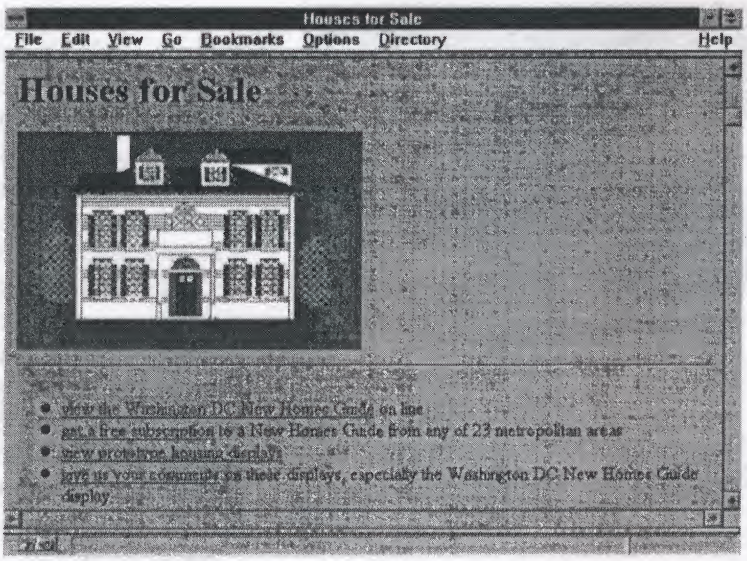
Catches of the Month: From Norway to the 'Burbs

Norwegian Internet guru Odd de Presno has been publishing his *Online World* book and newsletter for years, and now makes excerpts from and information about the publications available at **http://login.eunet.no/~presno/index.html**. *Online World* provides information about Internet resources, connectivity, and applications from a European perspective—a useful antidote to the U.S.-centric perspective of most Internet publications.

For Web spinners, two sites added to the *Guide* this month bring a wealth of information about HTML and the tools that are making it easier to create pages. Netscape Communications Corporation, makers of the fast new Navigator browser, has collected pointers to HTML primers, editors, and related tools at **http://www.mcom.com/MCOM/tricks_docs/tools_docs/index.html**. At **http://oneworld.wa.com/htmldev/devpage/dev-page.html** you will find information for novices as well as experienced spinners.



Home Fair gives house hunters a single source of information about properties, lenders, the purchasing process, and interest-rate trends; it gives lenders information about prospective clients.

It's been said that the kind of business best facilitated by the Internet is market making—bringing together buyers and sellers. Two exemplary companies added to the *Guide* this month that do just that are the Energy Exchange (**http://houston.infohwy.com/cyberia/energy/enex/xchange.html**) and the Homebuyer's Fair (**http://www.homefair.com**). Since 1983, the non-electronic version of the Energy Exchange has done more than $100 million in energy transactions. The Web site is now the place for oil companies to sell assets or finance drilling projects and for large investors to identify new opportunities. Arnold Kling's Homebuyer's Fair (see Arnold's article on small-money transactions in the December newsletter, p. 6) provides general information about the home-buying process, abundant information about mortgages (and a mortgage calculator!), and listings of houses in the Maryland suburbs of Washington, D.C. The Homebuyer's Fair (see the illustration) gives prospective lenders a way of learning about rates and communicating with lenders, and gives lenders a source of leads.

Archives for two Net institutions are now available via the Web. Fans of Gleason Sackman's great net-happenings mailing list now have a searchable archive of postings to the list: **http://www.mid.net/NET**. David Riggins's Gopher Jewels is now archived and searchable at the same site: **http://www.mid.net/GJEWEL**. To use either resource requires a browser that supports forms.

For folks worried that free information will go away once the Internet is commercialized, there's always the government (at all levels) to generate more of it, and the government, alas, is not about to go away. Check out the latest agencies and departments to go online: the CIA (**http://www.ic.gov**), the IRS (**http://www.ustreas.gov/treasury/bureaus/irs/irs.html**), the Department of Energy (**http://www.doe.gov**), the General Services Administration (**http://www.gsa.gov**), and OSHA (**http://www.osha-slc.gov/osha.html**).

Welcome back MecklerWeb! The highly informative and no longer controversial MecklerMedia Web server can be viewed at **http://www.mecklerweb.com**. There's good stuff here for anyone trying to keep up with news and trends in the world of CD-ROMs, "virtual reality," and the Internet. ◆

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Help Desk

*By Kevin Savetz**

Q I can access the file archives of an FTP site using FTP, Gopher, and the World Wide Web. Is it better or more efficient to download files using one method over the others?

A Once upon a time, if you wanted to copy files from one place on the Internet to another, there was only one tool you could use: FTP (file transfer protocol). Although FTP is still in wide use, today the Internet's file archives are increasingly available via other tools as well, including Gopher and the Web. From your standpoint, it doesn't matter much which method you use: each tool does the job of connecting to a remote site and transferring files to your computer.

However, looking at the bigger picture, Gopher and the Web are preferable to FTP for transferring files. If the file archives you wish to access are available via Gopher or the Web, you can be a good Net citizen by accessing the archives using one of those instead of FTP. You see, FTP requires a constant connection from your computer to another site—you're utilizing a little bit of that system from the time when you "open" the connection to until you type "quit." Gopher and the Web make more efficient use of connection time, by quickly connecting to a site, grabbing the necessary information, and disconnecting. These "quick hits" use less system resources and mean that more users can access a site simultaneously. On the other hand, the Web, at least, uses more bandwidth than older "protocols."

Many FTP sites set a limit on the number of users who may access the site at once. If you've tried FTPing in the middle of the day, you've undoubtedly seen a message like "too many connections—try again later." Sometimes you'll be offered a list of alternative sites. You're much less likely to be annoyed by that message if you use Gopher to access archive sites—since they use fewer system resources and connections are shorter, Gopher sessions are generally more available.

Q When I use Veronica to see what's available on a certain subject on a Gopher server, what's the difference between "searching Gopherspace" and "searching Gopher menus"? Also, what's the difference between Jughead and Veronica? Which should I use?

A Gopher is an easy-to-use, menu-driven Internet tool. It was the first program to make navigating the Internet truly easy for nontechnical users: rather than having to telnet or FTP to dozens of different sites in search of information (and recall all of those hard-to-remember site names), Gopher lets you pick items from menus, without making you think about where you're connected. Gopherspace—the vast information available in many formats, around the world via Gopher—is an enormous resource. However, even the finest libraries are useless without a method of indexing their contents: Veronica and Jughead are two tools that work as Gopherspace indexers.

Originally, Jughead was designed to index a single Gopher server. For instance, a university's system administrator might have used Jughead to make an index of all the articles in that university's Gopher server. Veronica was meant to index all of Gopherspace. Those definitions are less true today, since most Jughead servers index all of Gopherspace, and Veronica servers can be tweaked to search only a single Gopher site. There are other technical differences, but it all boils down to this: Veronica (which stands for the unlikely acronym Very Easy Rodent-Oriented Netwide Index to Computerized archives) and Jughead (which stands for Jonzy's Universal Gopher Hierarchy Excavation And Display) are similar tools. Today, Veronica is much more common.

While searching Gopherspace with Veronica, you often must choose between two sorts of searches: "Search Gopherspace by keywords in Titles" and "Search Gopher directories for keywords in Titles." The former searches everything in Gopherspace—menu names *and* the titles of resources available within menus. These gopherspace resources may be any type of data, including ASCII text, image files, links to telnet sites, and binary files. "Search Gopher directories" is a more limited search, which will find only Gopher directories (menu items) whose titles contain your keywords. This latter type of search can be useful in locating major holdings of information related to your subject *if* they're intuitively worded. After Veronica finds the Gopher directories and presents them to you in the form of another Gopher menu, you can open any of them to see the contents in more detail.

Remember that both Veronica and Jughead find resources by searching for specific words in document titles (the name of the resource as it appears on the menu of its home Gopher server). They do not do a full-text search of the contents of documents. ◆

The Help Desk is a regular feature of this newsletter. Questions are answered by Kevin Savetz, a contributing editor of the* Guide *and author of* Your Internet Consultant *(SAMS, 1994). You can submit questions care of David Peal, at (202) 739-9541 or* **dpeal@ix.netcom.com.

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Calendar

Strategic Alliances & Interconnection: Contributions of Game Theory to Telecommunications. Jan. 9-11. Sponsored by the International Telecommunications Society Symposium. University of Colorado, Boulder. Information: **http://www.csu.edu.au/special/conference/ITS95.html**; phone: (303) 492-8717; fax: (303) 492-1112; e-mail: **alleman@spot.colorado.edu**

ComNet Washington '95. Jan. 23-25. IDG World Expo. Information: (800) 225-4698 or (508) 820-8663. "Industry's only global networking show." 450 exhibitors, 22 tutorials, 50 conference sessions.

1995 RSA Data Security Conference. Jan. 9-11. Redwood Shores, Calif. Information: (415) 595-8782 (Kurt Stammberger).

Information Superhighway '95. Santa Clara, Calif. January 24-27. Information: (800) 774- 4929.

WebWorld '95. January 30-Feb. 1. Orlando, Fla. Sponsor: DCI. Information: **SEMINAR@dci-inc.com**; (508) 470-3880; **http://199.232.60.132/DCI/**. The first of a new conference series, launched by a major conference organizer.

Wireless Data Communications Conference. Sponsored by the National Wireless Communications Research Foundation. Jan. 26-27. Vancouver, Canada. Information: (604) 687-7644.

GroupWare 95. March 5-8. Boston, Mass. Information: call the Conference Group at (800) 247-0262.

Marketing on the Internet. March 2-3 (Boston); March 6-7 (New York); March 9-10 (Washington, D.C.). Presented by Target Marketing of Santa Barbara, Calif., sponsored by Sun Microsystems. Information: (800) 549-4659; e-mail **staff@targeting.com**.

Spring Internet World. April 10-13. San Jose, Calif. Information: (800) 632-5537; **iwconf@mecklermedia.com**.

Third International World Wide Web Conference. April 10-14. Fraunhofer Institute for Computer Graphics, Darmstadt, Germany. In English. Information: **http://www.igd.fhg.de/www95.html**.

WebWorld '95. April 19-21. Santa Clara Convention Center, Santa Clara, Calif. Organized by Digital Consulting Inc. Information: **SEMINAR@dci-inc.com; http://199.232.60.132/DCI/**; (508) 470-3880.

INET 95—The Internet: Toward Global Information Infrastructure. June 26-30. Honolulu, Hawaii. Information: **inet95@isoc.org**. Internet Society's 5th annual convention.

To list a conference , please write the editor at **dpeal@ix.netcom.com.** ◆

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